

REMARKS

The allowance of claims 2 and 3 and the indication that claim 1 and 14 are objected to and would be allowable if rewritten to overcome the objections set forth in the Office Action, with claim 14 being allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, is acknowledged.

By the present amendment, claim 1 has been amended in a manner suggested by the Examiner which is considered to overcome the objection set forth by the Examiner, it being noted that claim 1 and other independent claims of this application have been amended to ensure proper antecedent basis with respect to the recitation of "couple of substrates", and applicants submit that claim 1 should now be in condition for allowance together with its dependent claims 2 and 3. Claim 14 has been retained in dependent form, since applicants submit that the parent claim thereof as well as other claims in this application should now be in condition for allowance, as will become clear from the following discussion.

As noted above, each of the independent claims have been amended to refer to "couple of substrates" throughout, and other independent and dependent claims have been amended to clarify features thereof, which claimed features patentably distinguish over the cited art as will become clear from the following discussion. Also, submitted herewith is a corrected drawing of Fig. 11(a) and Fig. 11(b) so as to conform to the description in the specification and the proposed drawing correction submitted December 17, 2001. Acceptance of the drawings in this application is respectfully requested.

As to the rejection of claim 4 under 35 U.S.C. §102(b) as being anticipated by Sherk (US 4,071,287); the rejection of claims 5 and 9 under 35 U.S.C. §102(b) as being anticipated by Nagano (US 5,207,607); the rejection of claim 7 under 35 U.S.C. §102(b) as being anticipated by Tang (US 5,007,872); the rejection of claim 8 under 35 U.S.C. §102(b) as being anticipated by Otsuka et al (JP 53-141572 A); the

rejection of claim 6 under 35 U.S.C. §103(a) as being unpatentable over Tang (US 5,007,872); the rejection of claim 10 under 35 U.S.C. §103(a) as being unpatentable over Tang (US 5,007,872) in view of Sherk (US 4,071,287); the rejection of claim 11 under 35 U.S.C. §103(a) as being unpatentable over Tang (US 5,007,872) in view of Otsuka et al (JP 53-141572 A); and the rejection of claims 12 and 13 under 35 U.S.C. §103(a) as being unpatentable over Tang (US 5,007,872) in view of Nagano et al (US 5,207,607); such rejections are traversed insofar as they are applicable to the present claims, and reconsideration and withdrawal of the rejections are respectfully requested.

At the outset, as to the requirements to support a rejection under 35 U.S.C. 102, reference is made to the decision of In re Robertson, 49 USPQ 2d 1949 (Fed. Cir. 1999), wherein the court pointed out that anticipation under 35 U.S.C. §102 requires that each and every element as set forth in the claim is found, either expressly or inherently described in a single prior art reference. As noted by the court, if the prior art reference does not expressly set forth a particular element of the claim, that reference still may anticipate if the element is "inherent" in its disclosure. To establish inherency, the extrinsic evidence "must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill." Moreover, the court pointed out that inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.

With regard to the requirements to support a rejection under 35 U.S.C. 103, reference is made to the decision of In re Fine, 5 USPQ 2d 1596 (Fed. Cir. 1988), wherein the court pointed out that the PTO has the burden under §103 to establish a prima facie case of obviousness and can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of

the references. As noted by the court, whether a particular combination might be "obvious to try" is not a legitimate test of patentability and obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination. As further noted by the court, one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.

Furthermore, such requirements have been clarified in the recent decision of In re Lee, 61 USPQ 2d 1430 (Fed. Cir. 2002) wherein the court in reversing an obviousness rejection indicated that deficiencies of the cited references cannot be remedied with conclusions about what is "basic knowledge" or "common knowledge".

The court pointed out:

The Examiner's conclusory statements that "the demonstration mode is just a programmable feature which can be used in many different device[s] for providing automatic introduction by adding the proper programming software" and that "another motivation would be that the automatic demonstration mode is user friendly and it functions as a tutorial" do not adequately address the issue of motivation to combine. This factual question of motivation is immaterial to patentability, and could not be resolved on subjected belief and unknown authority. It is improper, in determining whether a person of ordinary skill would have been led to this combination of references, simply to "[use] that which the inventor taught against its teacher."... Thus, the Board must not only assure that the requisite findings are made, based on evidence of record, but must also explain the reasoning by which the findings are deemed to support the agency's conclusion. (emphasis added)

Turning first to claim 4, this claim has been amended to recite the feature of a surrounding area of said couple of substrates is sealed by an amorphous sealing glass, an inside space is used as a discharge space by sealing a discharge gas in an internal space, wherein an a gas unnecessary for a discharge operation is exhausted from said inside space under a condition that said amorphous sealing glass is located in a temperature range exceeding its softening point and no more than its

working point. It is noted that the recitation of an amorphous sealing glass has been added in order to provide antecedent basis for the later recitation of "said amorphous sealing glass", with claim 4 being further amended to recite the feature of the gas being exhausted under a condition that the amorphous sealing glass is located in the described temperature range.

Irrespective of the Examiner's contentions concerning Sherk in relation to claim 4, applicants submit that Sherk discloses a method for fabrication of a gaseous discharge display and/or memory device using a sealing glass which is a crystallized sealing glass and not an amorphous sealing glass, as recited in claim 4. That is, Sherk discloses utilizing glass sealant material in the form of devitrifying sealing glass which crystallizes as described in col. 4, lines 2-10 of Sherk, which crystallization is required to match the thermal expansion characteristics of the sealant with those of the substrate glasses and at the same time retard viscous flow. See also claim 1 of Sherk, for example. Furthermore, only after the assembly has been completely processed is the assembly evacuated via the exhaust tube 33 as described in col. 4, lines 31-33 and claim 1 of Sherk, for example. In contradistinction, in the present invention, the unnecessary gas is exhausted while sealing under the condition described as set forth in paragraph [0038] bridging pages 15 and 16 of the specification of this application. Thus, applicants submit that claim 4 patentably distinguishes over Sherk in the sense of 35 U.S.C. 102 and applicants submit that it cannot be considered obvious in light of the teachings of Sherk to provide the claimed features as set forth. Accordingly, applicants submit that claim 4 should be considered allowable over this cited art at this time.

With regard to claim 5, applicants note that this claim has been amended to more clearly set forth the previous claimed features in reciting a surrounding area of the couple of substrates is sealed by sealing glasses, wherein the surrounding area of the couple of substrates is sealed at least doubly by the sealing glasses each having an individual softening point different from each other, one of the sealing

glasses having one individual softening point sealing the surrounding area, and another of the sealing glasses having another individual softening point and disposed adjacent to and substantially parallel with said one of said sealing glasses so as to individually effect sealing of at least the same said surrounding area. Such features are illustrated in Fig. 17(a)-17(c) of the drawings of this application, wherein the sealing glasses 20 and 19 are arranged in parallel to one another and seal the surrounding area. More particularly, as described in paragraph [0076] bridging pages 39 and 40 of the specification, the substrates are doubly sealed with two kinds of sealing glass having an individual softening point that are different from each other with the sealing glass on the outside being a low softening-point amorphous seal frit 19 and the sealing glass on the inside being a high softening-point amorphous seal frit 19, which low and high softening-point seal frits are further described in paragraphs [0077]-[0082], for example, with paragraph [0076] being amended in conformance therewith. As is apparent, the sealing glasses 19 and 20 surround at least the same surrounding area and effect sealing thereof.

Turning to Nagano et al in relation to claim 5, while the Examiner contends that a surrounding area of the substrate is sealed by a sealing glass (6) and the couple of substrates (1, 3) are sealed at least doubly by sealing glasses (6, 27, 28) each having an individual softening-point different from each other, applicants submit that the sealing glass 27, 28 as illustrated in Figs. 18-19 of Nagano et al do not effect sealing of at least the same surrounding area as sealed by the sealing glass 6. Rather, although the various figures of Nagano et al are in cross-section, it is apparent that the sealing glass 6 effects a sealing between the substrates 1 and 3 of an area between such substrates by surrounding the entire area, as is apparent from Fig. 7 of this patent. On the other hand, as clearly illustrated in various figures of Nagano et al, the blocking rod 27 or blocking tablet 28 is provided only in the region of the gas port 2 as more clearly illustrated in Fig. 7 of Nagano et al, which is disposed only at one point of the area surrounded by the sealing glass 6 so as to

effect sealing of the gas part. Thus, applicants submit that Nagano et al does not disclose in the sense of 35 U.S.C. 102 or teach in the sense of 35 U.S.C. 103 a double sealing by different sealing glasses of at least the same surrounding area of a couple of substrates as now recited in claim 5, such that applicants submit that claim 5, as amended, patentably distinguishes over Nagano et al and should be considered allowable thereover.

With respect to the non-applicability of Nagano et al to claim 9, applicants note that by the present amendment, claim 9 has been amended to recite that a surrounding area of the couple of substrates is sealed by a sealing glass, and a glass layer having a heat resistance higher than the sealing glass is formed over an entire periphery of the inside space so as to be adjacent to an inside space end part of the sealing glass or within 2mm from an end part. Applicants note that such feature is illustrated in Fig. 12 of the drawings of this application, wherein as described in paragraph [0066] at page 35 of the specification, in addition to the sealing glass 14, the panel has an additional separation wall 18 with 1mm width along the overall periphery inside (within 2mm) of the sealing glass 14. As pointed out above, the sealing glass 27 and 28 of Nagano et al is not disclosed or taught in the sense of 35 U.S.C. 102 or 35 U.S.C. 103 so as to be formed over an entire periphery of the internal space so as to be adjacent to an inside space end part of the sealing glass or within 2mm from the inside space end part. Thus, applicants submit that claim 9 also patentably distinguishes over Nagano et al and should be considered allowable thereover.

Turning to claim 7 which stands rejected as being anticipated by Tang, applicants submit that the Examiner has misconstrued the claimed invention in light of the disclosure of Tang. More particularly, while the Examiner contends that Tang discloses "...a surrounding area of said substrate is sealed by a sealing glass (225), and ...wherein at least one portion of a surrounding area of said substrate, a cross-section of said sealing glass (225) viewed vertically to a substrate is shaped so as to

be convex with respect to an inside space at both its inside space end part and its outside end part (fig. 2)" (emphasis added), such is considered to be a mischaracterization of Tang. Applicants submit that in Tang, the sealing glass which seals a surrounding area of the couple of substrates is provided by the "seal 205" so as to form an enclosed chamber as described in col. 4, lines 62-68 of Tang. As further described, the substrates 200 and 203 also are provided with conductor pads 201 and 202, as shown in Fig. 3, for example, which are interconnected by an interconnect 225 formed of conductive solder glass. Irrespective of the Examiner's position, applicants submit that the conductive glass 225 referred to by the Examiner in Figs. 2 and 3 of Tang does not represent a "sealing glass" which seals a surrounding area of the couple of substrates, and as shown in Fig. 2 of Tang, the seal glass 205 does not have a convex shape when viewed vertically to one of the substrates. Furthermore, even assuming arguendo that the conductive glass 225 of Tang could be considered a sealing glass sealing a surrounding area of the couple of substrates, which it is not, it is readily apparent that with respect to an inside space which is used as a discharge space and is within the surrounding area, if it is assumed that one end part of the glass 225 may be considered to be shaped so as to be convex with respect to the inside space, it is readily apparent that the other end part of the conductive glass 225 has a concave shape with respect to the inside space. In contradistinction, as shown in Fig. 1(b) of the drawings of this application, the sealing glass 14 has a convex shape with respect to the inside space at both its inside space end part and its outside space end part, as recited in claim 7. That is, viewing Fig. 1(b), both end parts have the same convex shape with respect to the inside space. As such, it is apparent that neither the sealing glass 205 or the conductive glass 225 of Fig. 2 of Tang meet the recited limitations in the sense of 35 U.S.C. 102. Applicants note that claim 7, by the present amendment, has been amended to clarify the aforementioned features and applicants submit that claim 7

patentably distinguishes over Tang in the sense of 35 U.S.C. 102 as well as 35 U.S.C. 103 and should be considered allowable thereover.

As to claim 8 and non-applicability of Otsuka et al (JP 53141572 A) with respect thereto, applicants note that claim 8 is directed to the features as illustrated in Fig. 9 of the drawings of this application, wherein paragraph [0058] bridging pages 29 and 30 has been amended to refer to the filler 12 and it is described that at the sealing temperature, the filler 12 is cooled toward the discharge space, as shown in Fig. 9, and then the filler concentration at the discharge space becomes higher. That is, the filler distribution state is quantitatively shown in Fig. 9, in which the average filler concentration at the portion extending in by 100 μm from the end part facing the discharge space is 10% or more higher than the other portions. Applicants note that claim 8 recites that "at least at one portion of said surrounding area of said couple of substrates, a concentration of filler at an inside space end part of said sealing glass is larger than that in other portions." (emphasis added) Irrespective of the Examiner's position concerning Otsuka et al, which is in the Japanese language, applicants advise that Otsuka et al is silent on filler concentration. Applicants advise that in Otsuka et al, adherent 16 and 17 are coated around a core of glass fiber 14, 15. The filler is crystal grains added mainly to adjust thermal expansion coefficient, and in general, in a commercial sealing glass, filler grains are added in the sealing glass so as to be dispersed uniformly in the glass. (See, for example, paragraph [0058] bridging pages 29 and 30 of the specification of this application wherein it is provided that "the filler is distributed uniformly in cross section as shown in Fig. 4(b) to which the conventional sealing method is applied.") However, as pointed out in paragraph [0058] of the specification of this application, in case of this embodiment, as shown in Fig. 9, the filler 12 is pulled toward the discharge space and then the filler concentration at the discharge space becomes higher. Thus, in accordance with the present invention, the concentration of crystal grains of filler is larger at an inside space end of the sealing glass (the end indicated by 100 μm in Fig. 9 which is

at the inside space end of the sealing glass than at other portions as clearly illustrated in Fig. 9). Applicants submit that Otsuka et al fails to provide the claimed features as set forth in claim 8 in the sense of 35 U.S.C. 102, such that this claim also patentably distinguishes over this cited art and should be considered allowable thereover.

As to the rejections under 35 U.S.C. 103, claim 6 stands rejected as being unpatentable over Tang and as pointed out above with respect to the utilization of Tang in relation to claim 7, the Examiner has mischaracterized the disclosure of Tang in that what the Examiner refers to as a "sealing glass (225)" which seals a surrounding area of the couple of substrates is not a sealing glass as recited. That is, in Tang, the sealing glass is represented by the sealing glass 205 and Fig. 2 of Tang does not show a curvature of radius of the sealing glass 205. With respect to the conductive glass 225 of Tang, the conductive glass does not seal a surrounding area of the couple of substrates and does not have a protruding portion having a curvature radius between 0.1mm and 1mm formed on an overall periphery of said sealing glass at its inside space. Applicants submit that Tang fails to disclose the recited features, and insofar as the Examiner contends that it would be obvious to provide a curvature radius between 0.1mm and 1mm, in addition to Tang failing to provide the protruding portion formed on an overall periphery of the sealing glass at its inside space, any suggestion to provide a curvature radius between 0.1mm and 1mm represents the principle of "obvious to try" which is not the standard of 35 U.S.C. 103. See In re Fine, supra. Moreover, the Examiner's suggestion represents utilization of what the teacher has taught against its teacher, which is not proper under 35 U.S.C. 103. See In re Lee, supra. Thus, applicants submit that claim 6 patentably distinguishes over Tang in the sense of 35 U.S.C. 103 and should be considered allowable thereover.

With regard to the rejections of claims 10-13 over various combinations of Tang with Sherk, Otsuka et al or Nagano et al, applicants note that such claims

which depend from parent claim 7, patentably distinguish over Tang for the reasons given above with respect to parent claim 7. Moreover, the recited features of these dependent claims are also not disclosed or taught by the other cited art as pointed out above with respect to the deficiencies of such cited art, and the proposed combination of references fails to provide the claimed features of these dependent claims when considered with parent claim 7. Thus, applicants submit that these dependent claims further patentably distinguish over the cited art in the sense of 35 U.S.C. 103 and should be considered allowable at this time.

In view of the above amendments and remarks, applicants submit that in addition to the claims indicated as being allowed or allowable, all other claims in this application patentably distinguish over the cited art and should now be in condition for allowance. Accordingly, issuance of an action of a favorable nature is courteously solicited.

To the extent necessary, applicant's petition for an extension of time under 37 CFR 1.136. Please charge any shortage in the fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 01-2135 (503.40396X00) and please credit any excess fees to such deposit account.

Respectfully submitted,



Melvin Kraus
Registration No. 22,466
ANTONELLI, TERRY, STOUT & KRAUS, LLP

MK/cee
(703) 312-6600